

Designing for Dissemination

September 19-20, 2002

Madison Hotel

Washington, DC

Conference Summary Report

December 18, 2002

Sponsored by:

National Cancer Institute

Center for the Advancement of Health

Robert Wood Johnson Foundation

Purpose of Report

This report summarizes the findings reported at the Designing for Dissemination Conference, September 19-20, 2002, and the recommendations made by the researchers, practitioners, and intermediaries who contributed to the effort to overcome the barriers to research dissemination and the adoption of evidence-based interventions. The findings and recommendations from this conference should be viewed as the first steps in a journey that will require the continued commitment of all involved to take immediate and long-term actions based on the conceptual framework presented herein.

Background

Introduction

Each year, billions of U.S. tax dollars are spent on research and hundreds of billions of U.S. tax dollars are spent on health service delivery programs. Little is spent on or known about how best to ensure that the lessons learned from research inform and improve the quality of health services and the availability of evidence-based approaches, however. The National Cancer Institute (NCI) has recognized that closing the gap between research discovery and program delivery is both a complex challenge and an absolute necessity if we are to ensure that all populations benefit from the Nation's investments in new scientific discoveries.

Diffusion and Dissemination in Brief

It took 263 years for the knowledge about the preventive value of citrus juice (demonstrated by Lancaster) to be introduced into the British navy (Lomas, 1993). Among the earliest and most impressive diffusion studies were those that examined the diffusion of hybrid corn and a classic drug study that examined the diffusion of tetracycline among 33 doctors in a New England town in the 1950s (Rogers, 1995). Both of these early studies highlighted the important role of interpersonal networks in the diffusion process.

Diffusion and dissemination have long been concerns of cancer control, starting with its early history in promoting the adoption of the Pap smear test for the prevention and early detection of invasive cervical cancer. The gap between ideal practices and reality has long been recognized. Over the years, NCI and its relevant cancer control divisions have undertaken efforts to accelerate the dissemination of proven interventions. These have included the Community Based Cancer Control Programs in the 1970s, the Community Clinical Oncology Programs (CCOPs) in the 1980s, and Prescribe for Health in the 1990s. While we have learned modestly from each of these efforts and others, none has achieved all that was hoped.

Generally, knowledge does not translate into practice until a number of other factors, often political and institutional, fall into place. Lomas (1997) argued that the "current failings of dissemination and uptake have more to do with miscommunication—inappropriate dissemination, limited commitment to uptake, lack of understanding and unrealistic expectations

of each others' environments—than with unavailability of research or an absent need for it in decision making” (p. 22).

Key Definitions

The following list of key definitions is provided to clarify terms:

1. Innovation—idea, practice, or object that is perceived as new to an individual or to another unit of adoption.
2. Diffusion—refers to the passive process by which a growing body of information about an intervention, product, or technology initially is absorbed and acted upon by a small body of highly motivated recipients who value the rewards of finding the information and for whom the search costs of finding the information are relatively low (Lomas, 1993). Studies over several decades show that the typical diffusion process follows an S-shaped curve, starting with early adopters and ending with laggards. Diffusion is a more passive process than dissemination (Lomas, 1993). As Lomas noted, the possibility that a particular journal article will reach community physicians by diffusion is low, especially until the article has reached the early stage adopters, who are active, information-seeking practitioners and organizations.
3. Directed diffusion—strategically planned efforts to promote, influence, and accelerate the natural diffusion and dissemination processes (Orlandi, 1996).
4. Technological diffusion—progress of a technological innovation in a given social system over a period of time (Battista, 1989).
5. Dissemination—process through which target groups are made aware of, receive, accept, and use information and other interventions.
6. Implementation—identification of and assistance in overcoming barriers to the application of new knowledge obtained from a disseminated message (Lomas, 1993).

“Diffusion, dissemination and implementation are not interchangeable terms. Rather, they represent phases in a process of increasingly active and more focused processes, with each subsequent phase dependent on the success of its predecessor phase.” (Lomas, 1993)

What Is Known About Successful Dissemination and Diffusion?

Over the past several decades, thousands of studies have been done to track the process of diffusion and dissemination for behaviors, products, technologies, and ideas. By 1999, more than 4,000 studies had been reported. One of the many challenges of diffusion and dissemination is the fact that researchers, practitioners, and decisionmakers speak different languages (Lomas, 1997). Researchers may believe that their responsibility for dissemination ends when the data are analyzed and published or presented. The dissemination of evidence-based interventions may be hindered by reliance on randomized clinical trial designs as a key determinant of eligibility for inclusion in meta-analyses.

At times this has created a disconnect between practitioners, who point to interventions they “know” are effective based on clinical practice, and researchers, who demand evidence that may not be forthcoming. Also, interventions demonstrated to be effective in controlled clinical trials may not be as effective in real world settings. Davis and Howden-Chapman (1996) observed the paradoxes between research and practice in medicine. There is a long history of dubious treatments for which there has been no medically sound basis, including some for which Nobel prizes have been awarded. By contrast, there also is a considerable record of research demonstrating efficacious treatments for which adoption was long delayed. Finally, there have been many effective treatments for which no definitive scientific evidence was available (e.g., the Pap test) (p. 866).

Several characteristics predispose toward diffusion and dissemination according to the classic work by Rogers (1995). These include trialability, relative advantage, compatibility, complexity, and observability. Diffusion and dissemination are enhanced when the innovation is perceived as superior to existing practice (Parcel et al., 1989). Numerous studies and reviews (e.g., Bero et al., 1998) also have shown that passive diffusion alone is relatively ineffective.

Handley et al. (1994) reviewed strategies that have been shown to be effective in changing patient and physician behaviors and in improving clinical practice. Interventions, which are more likely to be effective in promoting adoption, include educational outreach visits, reminders, multifaceted interactions, and interactive education meetings. Changing social influences through peer modeling can be an effective strategy (Lomas, 1993). In addition, findings and recommendations must resonate with specialty group and local norms and values. Partnerships between universities and clinical delivery organizations are more likely to result in dissemination of clinical and public health research findings than when researchers work in isolation (Davis, 1996).

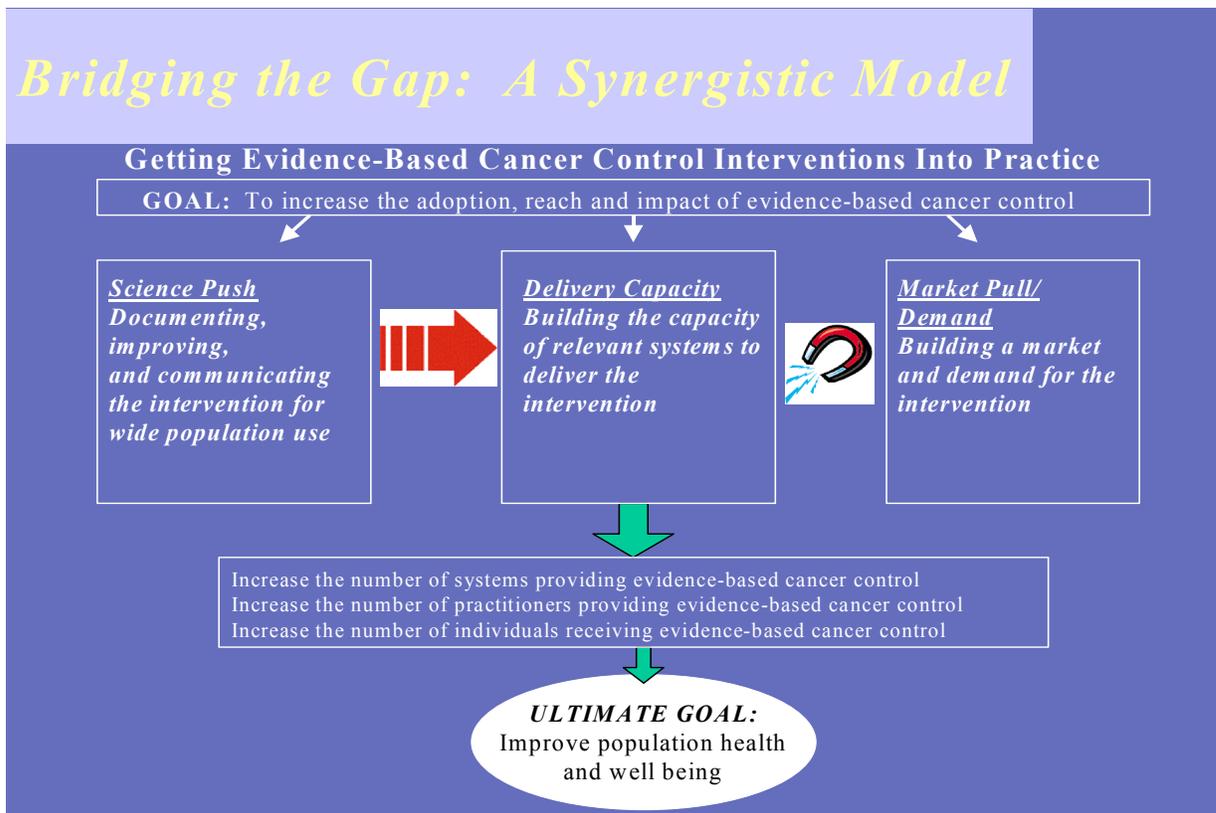
Lomas suggests that the process of dissemination be tailored to the audience. He illustrated the complexity of the dissemination process by identifying the many components of the environment, including the practitioner and patient; external factors; and personal, administrative, economic, and community environments that may influence the extent to which research information becomes part of practice.

Lomas (1993, p. 232) argued that research findings are more likely to be implemented into practice when:

- the diffused research is synthesized by a credible and influential body and disseminated in a “user friendly” format with a message that justifies the need for change by comparison with existing approaches, norms, and concerns (i.e., a persuasive communication);
- the implied change can be implemented within flexible parameters, and implementation is within the power of the intended user without the need for extensive collaboration and cooperation with others;
- the existence and importance of the research findings are communicated from a variety of sources both within and outside the local community;

- there are respected and influential local exemplars considering or actually adopting the findings for their own practices;
- there is an opportunity to explore the implications of the research findings in a personal encounter with either an influential local colleague or a respected outside authority; and
- adoption of the findings will not come into conflict with the economic or administrative incentives of the physician's (or other's) working environment, nor with the expectations of patients or of the communities from which they come.

There must be science/technology push to prove or improve interventions for application (see figure below). Interventions alone, however, are not sufficient without delivery capacity and market pull/demand. NCI has paid considerable attention to science/technology push but less attention to delivery capacity and market push.



There has been great variability in the adoption of evidence-based interventions in the areas of cancer treatment and control. For example, one year after breast-conserving surgery was shown to be effective in clinical trials, there was tremendous geographic variation in its use (Young et al., 1996). Similar variations have occurred in use of other treatments and early detection tests. For example, although colorectal cancer screening is endorsed by the major medical organizations, most Americans are not being screened on a regular basis.

Summary

It is increasingly clear that the continued investment in new discoveries in health promotion and cancer prevention and control, while absolutely necessary, is not sufficient to guarantee the adoption and implementation of evidence-based interventions to reduce the burden of cancer. This is of particular concern with respect to low-income, ethnically diverse, and otherwise underserved populations who, while bearing an unequal burden of cancer, often are slow to benefit from research discoveries. Because of this, our failure as a nation to ensure the rapid dissemination and quick implementation of evidence-based interventions has contributed to health disparities observed in cancer risk factors and cancer outcomes.

Preconference Findings

This section summarizes the findings reported to the conference participants regarding: 1) an evidence review of the scientific literature on the dissemination of selected cancer control interventions and 2) the results of a preconference concept mapping exercise conducted with and by the meeting invitees.

The evidence review, commissioned by the NCI through the Agency for Healthcare Research and Quality (AHRQ), was conducted by the McMaster University Evidence Practice Center. Dr. Peter Ellis, of McMaster University, briefly reported on what was found in a systematic review of the dissemination and diffusion literature specific to the dissemination of evidence-based interventions in five areas of cancer control:

- Tobacco control
- Dietary change
- Mammography screening for breast cancer
- Pap smear testing for cervical cancer
- Cancer pain management

The concept mapping exercise, commissioned by NCI and conducted by Concept Systems, Inc. (CSI), invited all potential meeting participants to suggest key ideas to be addressed, sorted the ideas into conceptual categories, and asked each of the invitees to rate the importance and feasibility of the ideas. Dr. Dan McLinden of CSI summarized the findings.

The brief summary of the literature review findings and the summary of the concept mapping findings were presented on the morning of the first day of the conference and helped inform the discussion groups that took place during the afternoon of the first day and on the morning of the second day. The full evidence review report, when completed, will be available on the AHRQ Web Site at <http://www.ahrq.gov/clinic/epcix.htm> and NCI's Designing for Dissemination Web site (under development). The complete process description and the data from the concept mapping exercise can be found at <http://www.conceptsystems.com/results/d4d/>.

What Was Reported in the Scientific Literature?

The evidence review focused on the process of transferring valid and reliable research findings into clinical and public health practice. A barrier to understanding this process from the literature and to facilitating this process is that the terms diffusion, dissemination, implementation, and uptake are used differently by different authors. The confusion in the literature also is reflected in the disagreements among researchers about the meaning of the terms, the end points to be measured, and the best designs to study this process.

The evidence review was conducted in two parts. The first part examined intervention study evidence reviews to establish the intervention approaches, within specific cancer control intervention arenas (e.g., smoking cessation, dietary change, Pap smear screening), that had been shown to be effective in changing behavior. Presumably, such intervention approaches could be considered worthy of dissemination and as such would be the focus of the second part of the evidence review. The second part of the review examined original reports (as opposed to evidence reviews) of efforts to disseminate evidence-based cancer control interventions. In general, the number of systematic reviews of intervention approaches examined in the first part exceeded the number of dissemination and diffusion original reports examined in the second part. The table below summarizes this finding.

<i>Intervention Approach</i>	<i>Systematic Reviews</i>	<i>D&D Original Report Search Yield</i>	<i>D&D Full Text Screen</i>	<i>D&D Data Extracted</i>
<i>Smoking Cessation</i>	16	1,587	213	15 studies (19 articles)
<i>Healthy Diet</i>	7	2,872	95	5 studies (7 articles)
<i>Mammography</i>	14	597	72	4 studies
<i>Pap Smear</i>	8	357	36	2 studies
<i>Control of Cancer Pain</i>	1	835	33	3 studies

The table below summarizes the categories of dissemination approaches that were reviewed in the 29 studies reflected in the right-hand column of the preceding table.

<i>Dissemination Intervention Category</i>	<i>Examples of Dissemination Interventions Included</i>
<i>Dissemination targeting health professionals</i>	Train-the-trainer, academic detailing, treatment algorithms, role modeling, multiple dissemination strategies, postal delivery
<i>Dissemination targeting organizations (e.g., HMOs)</i>	Evidence-based manuals, workshops, targeted approaches to management, passive dissemination of worksite interventions
<i>Dissemination targeting individuals</i>	Media awareness campaigns, peer leader programs

While some examples of the dissemination and diffusion techniques appeared promising for disseminating selected cancer control approaches (e.g., train-the-trainer approaches and media awareness campaigns for smoking cessation), there was insufficient evidence to recommend any of the dissemination approaches reviewed. Further, evidence suggested that certain dissemination approaches showed little or no effectiveness (e.g., academic detailing in changing office procedures and use of materials for improved screening). Thus, while much is known about cancer control approaches that work, very little is known about how best to disseminate these approaches so they may be widely implemented.

Passive approaches (diffusion), such as mailing materials to targeted populations generally were ineffective. Active approaches (dissemination) such as the train-the-trainer models, media campaigns, and the use of opinion leaders were more likely to be effective in promoting change in knowledge and attitudes when used alone or in combination. Dissemination approaches that are likely to promote the wide adoption of individual health behavior and system changes, however, have yet to be systematically evaluated.

A conceptual challenge in synthesizing the dissemination and diffusion literature stems from the difficulty in differentiating individually-focused cancer prevention and control intervention approaches—targeted at reducing risk factors (e.g., tobacco use, dietary) or promoting the adoption of health-protective behaviors (e.g., cancer screening, pain control)—from dissemination and diffusion approaches—designed to increase service provider or system adoption, implementation, and maintenance of evidence-based intervention approaches shown to reduce risk factors or to promote health-protective behaviors among individuals served by those providers or systems. One person’s cancer prevention and control intervention is another’s dissemination intervention and, like beauty, dissemination sometimes appears to be in the eye of the beholder.

A methodological challenge to synthesizing the literature is the diversity of designs used to evaluate dissemination and the dearth of controlled studies that could, for example, compare one dissemination approach with another. Thus, many of the publications ultimately excluded from the full text review amounted to case studies or reports of what was done to get an evidence-based intervention adopted and provided little insight into theoretical frameworks, comparative dissemination approaches, or outcome measurement issues for tracking the adoption and implementation of evidence-based interventions. These limitations are characteristic of an understudied field of health inquiry and lead to the legitimate question: What constitutes scientific rigor for dissemination research? Until these conceptual and methodological issues are addressed systematically, the ability to obtain investigator-initiated research funding and to publish findings may remain limited.

The evidence review identified several recommendations for future dissemination research:

1. Increase the amount of research that is supported and published.
2. Focus the research on the dissemination of effective cancer control interventions.
3. Examine the best research designs and the best measures of outcome effectiveness for dissemination research.
4. Define what constitutes a reasonable decline of intervention effectiveness after an intervention is extended to more diverse populations and settings beyond a controlled clinical trial.
5. Explore how qualitative research methods may help to capture local contextual factors that can serve as barriers to or facilitators for the adoption of evidence-based interventions.
6. Explore establishing criteria for reporting dissemination research to help clarify the field of study.

What Was Reported by Conference Invitees?

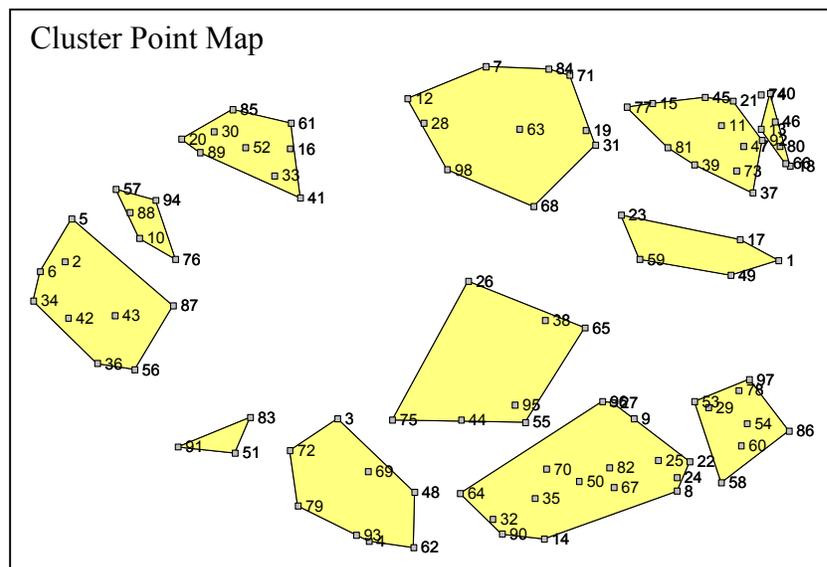
The concept mapping process was used to combine the ideas of those invited to the meeting in unique ways to understand the group's thoughts about research dissemination. The steps taken to achieve this goal were:

1. A focus question was created to encourage invitees to share their best ideas. Participants generated ideas by completing the following prompt: "One thing that should be done to accelerate the adoption of cancer control research discoveries by health service delivery programs is...." The invitees generated more than 200 statements that were consolidated into a final set of 98 ideas used to address the topic.
2. Planning committee members organized the 98 ideas into categories to identify themes or patterns.

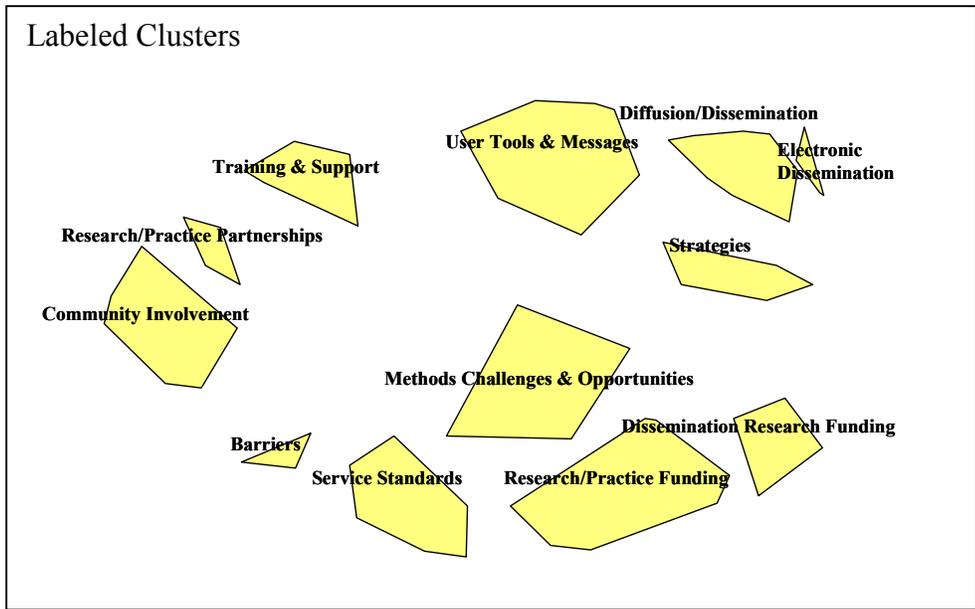
3. The invitees provided input by rating the importance and feasibility of each idea.
4. The Concept Systems[®] software was used to take individual data and, using several multivariate statistical algorithms, organize the information and display it in a series of easily readable concept maps. These maps show the relationships between the ideas, the clustering of ideas into themes or issues, and how participants rated the ideas.

What Information Resulted From Concept Mapping?

A single concept mapping project produces a number of interrelated graphics, similar to different views of the same structure. The Cluster Point Map below shows each of the final 98 ideas as a point on the map. Points that are closer together are considered more similar conceptually than are points that are more distant. This map also shows the 12 categories into which the points were sorted. Ideas within a cluster are related conceptually. Clusters that are close together may represent conceptually related themes.

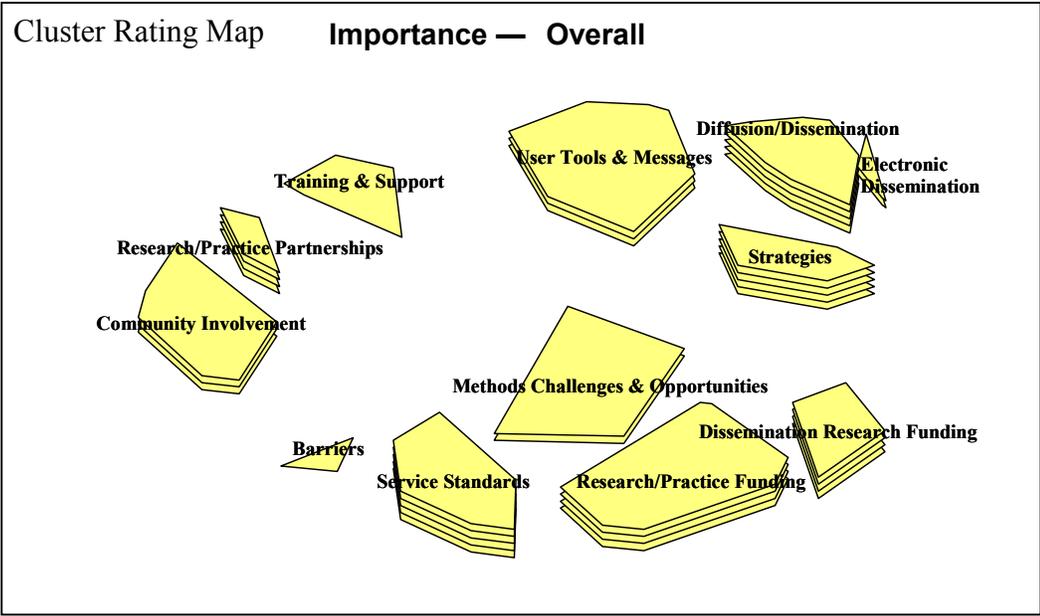


The Labeled Cluster Map in the following figure again shows the 12 categories; this time without the points (i.e., the individual ideas that were grouped together in that cluster), but with the labels that summarize the ideas inside. The categories are: Service Standards, Methods Challenges & Opportunities, Research/Practice Funding, Dissemination Research Funding, Strategies, Diffusion/Dissemination, Electronic Dissemination, User Tools & Messages, Training & Support, Research/practice Partnerships, Community Involvement, and Barriers.

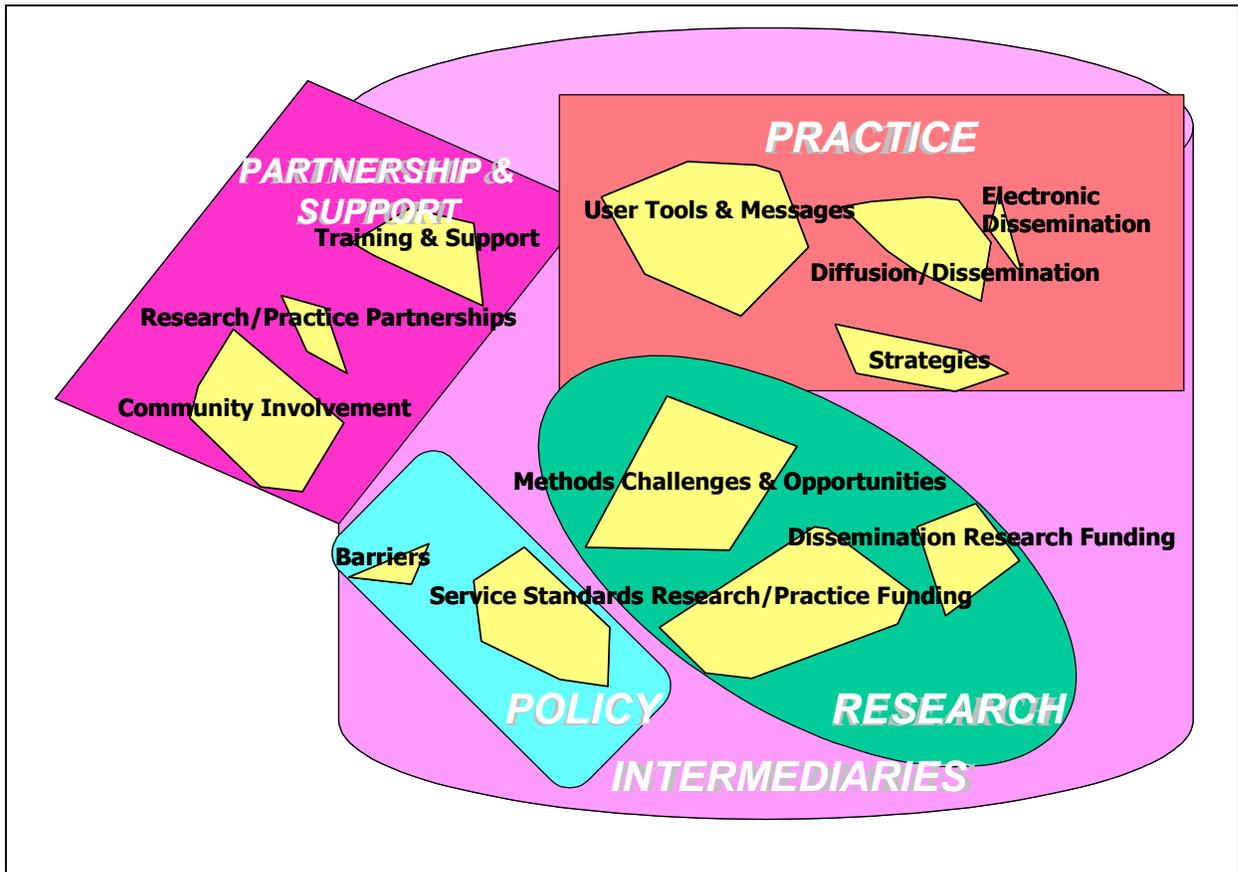


In addition to defining the issues, we also wanted to know whether the emphasis among the ideas should differ. Using the ratings of importance provided by project participants prior to the conference, we created the Cluster Rating Map shown below.

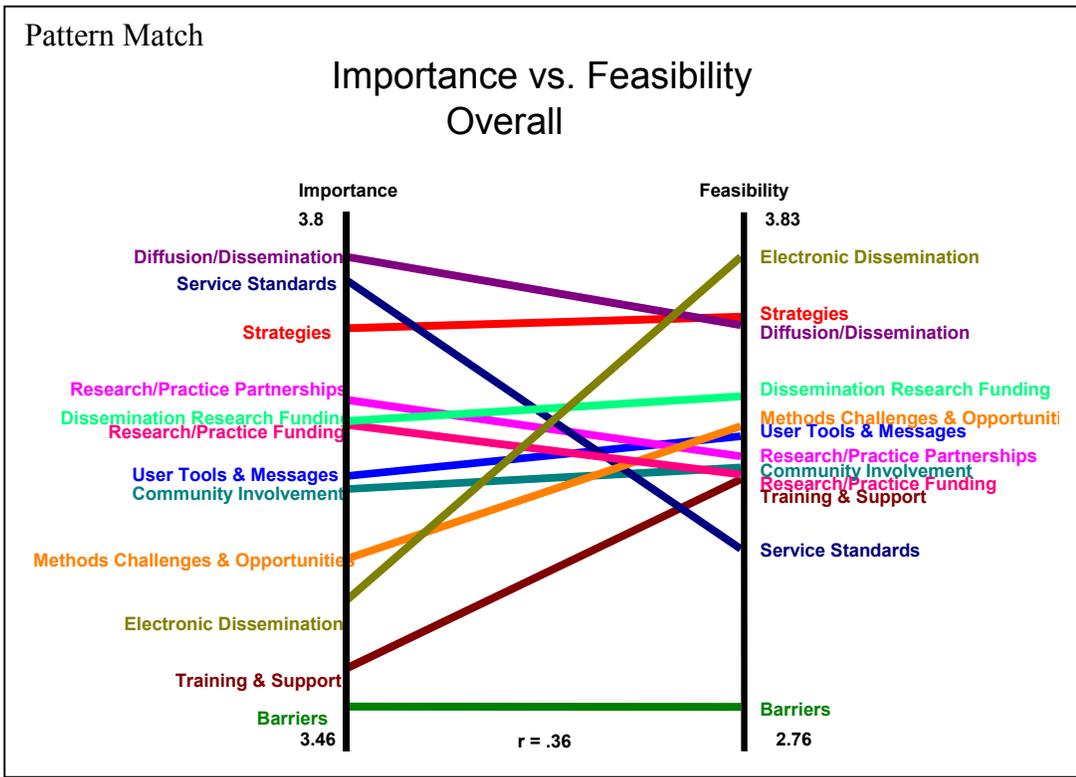
The height of each cluster in the Cluster Rating Map (i.e., the number of layers) indicates the average importance rating for the cluster (more layers=more important). With only a single layer, Training & Support was considered less important than was Service Standards, which had five layers. Note that this refers to “relative” importance. Because key informants generated all of these ideas, all of the ideas are considered important. In rating the terms, therefore, we asked participants to consider the importance of any idea relative to that of other important ideas.



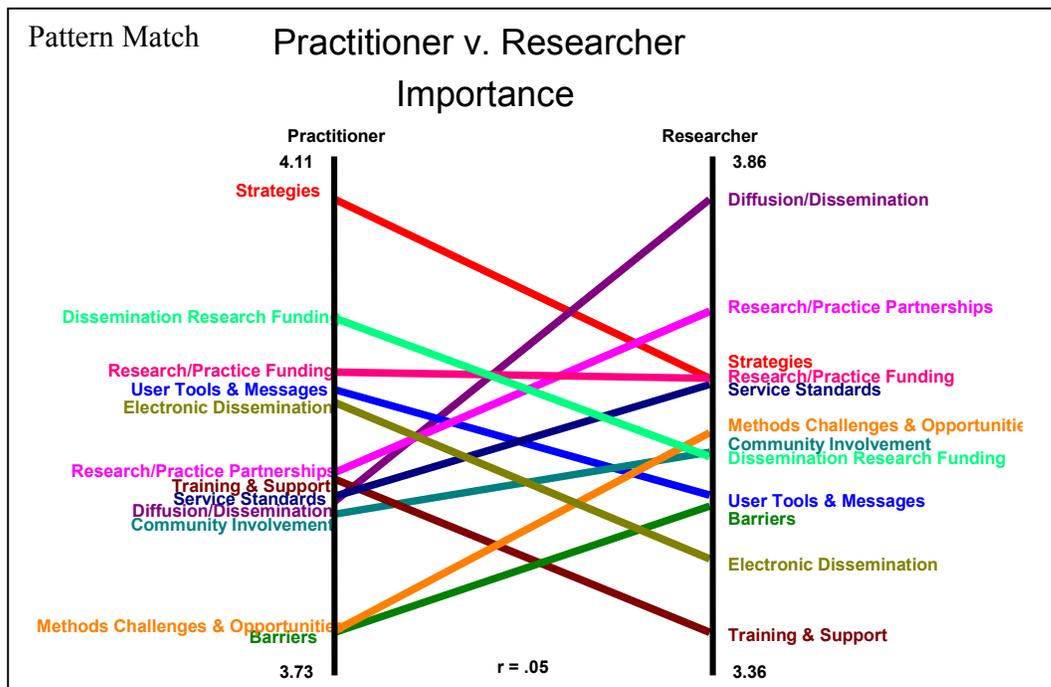
The concept map was further analyzed, and four large categories of concepts (research, practice, partnership and support, and policy) were identified. These are reflected in the figure below. Many researchers and practitioners noted that, unless intermediaries provide new funding for almost all of these clusters of activities, the likelihood of expanded dissemination research and practice is extremely limited.



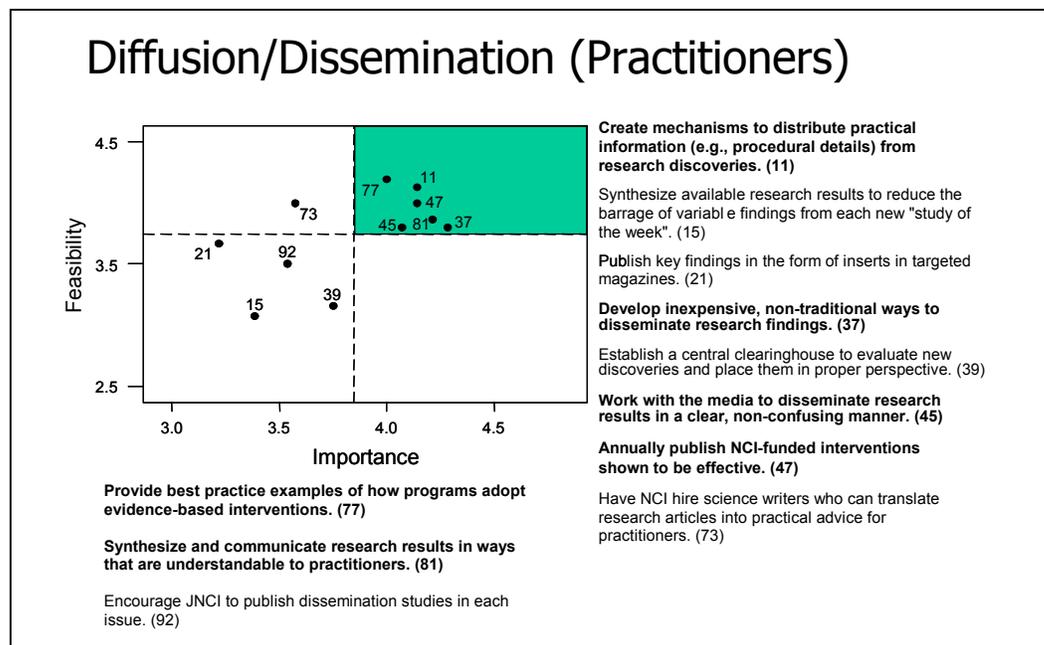
Participants also completed a feasibility rating. The Pattern Match (Importance vs. Feasibility, in the following figure) shows the correlation between the average importance and average feasibility ratings for each cluster. The greater the slope of the line between the importance and feasibility ratings, the less the ratings were correlated. For example, Service Standards had a higher average importance rating than feasibility rating, indicating that the group perceived this topic to be quite important but relatively difficult to address.



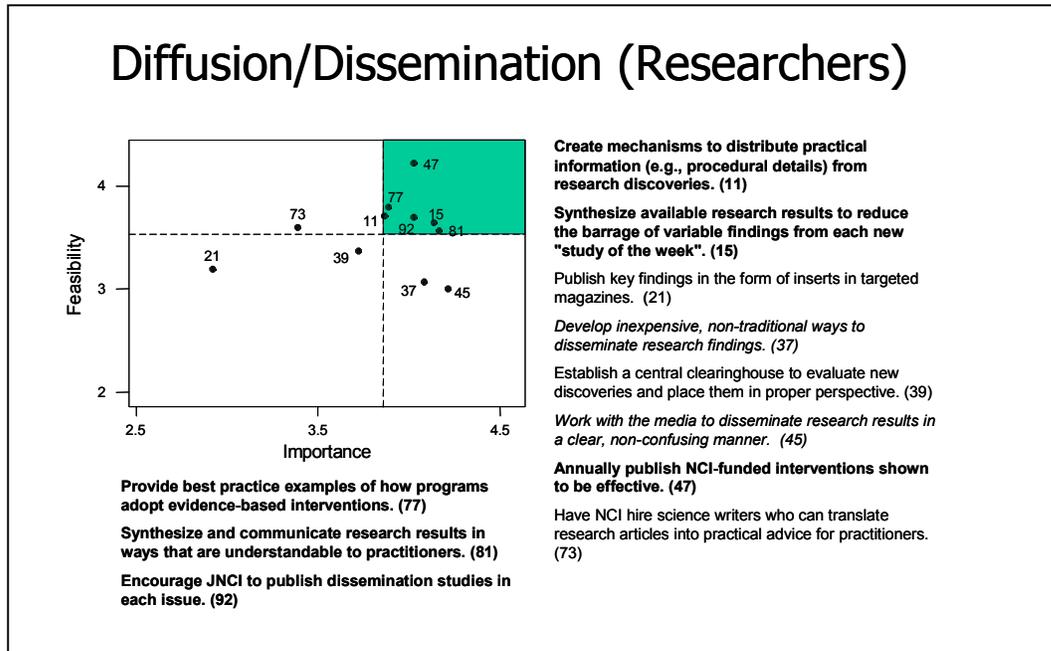
The pattern matches were compared among participant groups (i.e., researchers, practitioners, intermediaries), and major differences were observed in the importance ratings assigned by the different groups. The greatest differences were observed between researchers and practitioners as illustrated in the figure below. On average, the range of importance ratings for practitioners was higher when compared to researchers, and the correlation between relative importance ratings was very low. Practitioners saw Strategies, Dissemination Research Funding, User Tools & Messages, Electronic Dissemination, and Training & Support as being more important than did researchers. Researchers saw Diffusion/Dissemination, Research/Practice Partnerships, Service Standards, Methods Challenges & Opportunities, Community Involvement, and Barriers as more important than did practitioners. The only category where the two groups seemed to be in agreement was the relative importance of Research/Practice Funding (rated as third most important by practitioners and fourth most important by researchers).



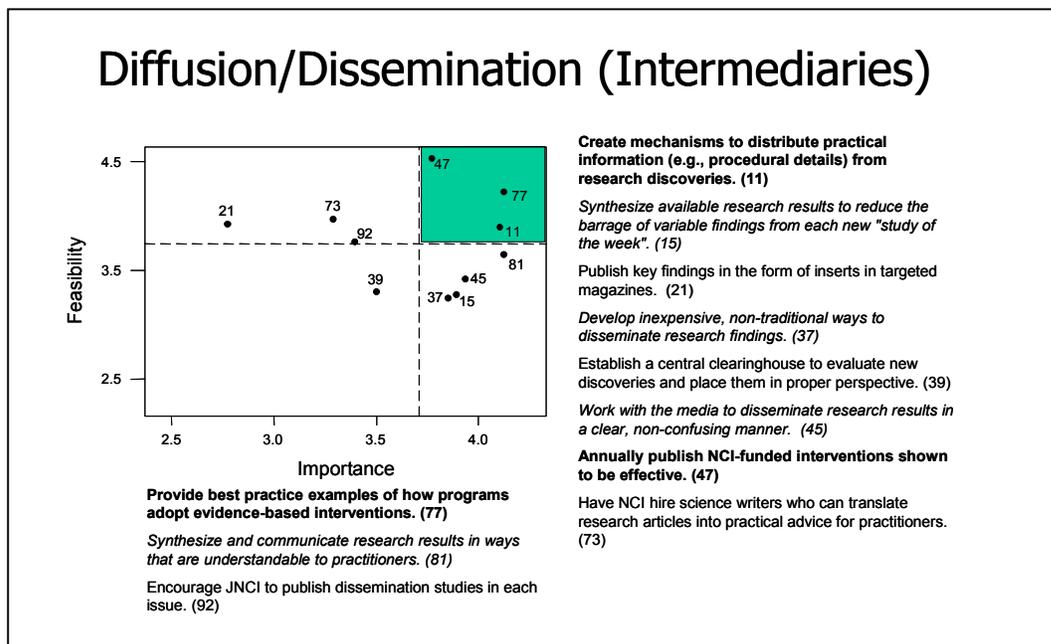
In addition to comparing different participant groups on their average ratings for each cluster, we explored the importance and feasibility ratings assigned to individual items within clusters by different groups. An example of this analysis presented at the conference explored how practitioners, researchers, and intermediaries viewed ideas that made up the cluster labeled Diffusion/Dissemination. As seen below, practitioners identified 6 out of the 11 statements that made up this cluster as above average in both importance and feasibility. These ideas appear in boldface in the figure below.



The figure below shows that, when the same set of statements were rated by researchers, they also saw 6 of the 11 statements as being above average in both importance and feasibility. Two of the practitioner statements (37 and 45), however, were not judged as feasible by researchers. Also, statements 15 and 92, which focused on research synthesis and the publication of dissemination studies, were judged by researchers as being both more important and more feasible when compared with their practitioner colleagues.



Finally, when intermediaries rated the same set of statements, they on average rated only three of the statements (11, 47, and 77) as being above average in importance and feasibility.



The differences in perspective were reflected in most of the other concept mapping clusters and speak to the challenge these potential partners in research dissemination and evidence-based program implementation face in finding common ground and an agreed-upon common action agenda. This was the challenge faced by participants during the remainder of the meeting.

Summary of Meeting Agenda

September 19, 2002

- 8:30 a.m. – 8:45 a.m. Welcome
- 8:45 a.m. – 9:30 a.m. Diffusion and Dissemination: The Next Frontier
- 9:30 a.m. – 10:15 a.m. Why are we here? The perspective of:
A Practitioner
A Researcher
An Intermediary
- 10:15 a.m. – 10:45 a.m. BREAK
- 10:45 a.m. – 11:00 a.m. What you thought was important and feasible: Concept Mapping Summary
- 11:00 a.m. – 11:15 a.m. Diffusion and Dissemination in Cancer Control: Evidence Review
- 11:15 a.m. – 12:00 noon Translating Research into Improved Outcomes: The NCI Perspective
- 12:00 noon – 1:15 p.m. LUNCH
- 1:30 p.m. – 3:00 p.m. Interdisciplinary Working Group Sessions (key stakeholder issues)
- 3:00 p.m. - 3:15 p.m. BREAK
- 3:15 p.m. – 4:30 p.m. Interdisciplinary Working Group Sessions (actions to address issues)
- 4:30 p.m. Adjourn for the Day
- 6:30 p.m. DINNER

September 20, 2002

- 8:30 a.m.- 9:00 a.m. Summary of Day One Findings
- 9:00 a.m. – 10:30 a.m. Stakeholder Meetings for Short-Term and Long-Term Action Plans
- 10:30 a.m. – 11:15 a.m. BREAK & Hotel Checkout
- 11:15 a.m. - 12:15 p.m. Stakeholder Summary of Action Plans
- 12:15 p.m. – 12:30 p.m. Summary Remarks
- 12:30 p.m. ADJOURN

Summary of Interdisciplinary Group Findings

The concept mapping data showed that each group (researchers, practitioners, and intermediaries) holds very different ideas about its own role and the roles of the other groups in disseminating and implementing evidence-based interventions. During structured discussion sessions held on the afternoon of the first day of the conference, participants were assigned to small groups that included representatives from all three groups and were asked to explain their views about their roles in research translation, dissemination, and use to their fellow group members.

There was remarkable consistency across the small group discussions. In almost all groups, researchers were the least likely to believe that translation and dissemination of research findings were their responsibility; they are not trained in the science of dissemination and communication, their grants generally do not pay for the work, and their interests and strengths lie elsewhere. Similarly, practitioners, whether clinicians or public health professionals, generally assigned responsibility for the synthesis and dissemination of research elsewhere. They saw their job as acting on findings that are readily available and formatted for easy use. Intermediaries, whether representatives of public or private funders or of nonprofit policy organizations, were likely to describe translation and dissemination as activities for which they could provide leadership, but they were adamant that researchers and practitioners must play important partnership roles in the process.

After much discussion, participants agreed that responsibility for dissemination must be shared. With this in mind, groups were asked to identify action steps that each group—researchers, intermediaries, and practitioners—could initiate to close the gap between research discovery and more effective program delivery.

There was widespread discussion about the formidable barriers to change. The incentives for maintaining the status quo are considerable, and major shifts in how research and health care delivery are funded are critical antecedents of the fundamental changes participants were asked to envision. Nevertheless, most groups agreed that leadership from the top is critical, that research peer review committees should be educated about dissemination, and that incentives are needed for researchers and practitioners to support dissemination.

Action Steps

The following action steps were identified by the small groups.

Intermediaries

- Increase support for infrastructure and incentives to encourage dissemination and adoption of evidence-based research in practice.
- Increase leadership and support for the development of knowledge synthesis and tools.
- Strengthen collaboration and communication by convening researchers and practitioners in conferences, meetings, training, and ongoing partnerships to stimulate research/practice partnerships.

Practitioners

- Seek training to learn how to implement new evidence-based programs and ensure accountability.
- Use and evaluate existing evidence-based tools (e.g., Guide to Community Preventive Services).
- Communicate both their needs as practitioners and their community needs to researchers to influence research priorities.

Researchers

- Engage in community-based participatory research.
- Engage in interdisciplinary research to gain experience and to promote collaboration across fields.
- Integrate dissemination into the design of intervention research studies.

Summary of Practitioner, Researcher, and Intermediary Action Agendas

On the morning of the second day of the conference, participants were divided into four discussion groups, as follows:

- Practitioners
- Researchers
- Nonfederal Intermediary Agencies
- Federal Intermediary Agencies.

Each group was asked to identify no more than seven action items to which they as a group and as individuals could commit. At least two of these action items had to be initiated before the end of calendar year 2002 (short-term), with the remaining action items to be implemented by 2003 (mid-term) or 2004 and beyond (long-term). The groups also communicated key messages to each other that would facilitate achieving their group action plans.

Practitioners' Action Steps

Short-Term	Mid- and Long-Term
<ul style="list-style-type: none"> • Find existing projects that demonstrate systematic implementation of evidence-based practice. • Prioritize participation in community-based research that includes implementation and evaluation. 	<ul style="list-style-type: none"> • Advocate for demonstration projects. • Use and evaluate existing evidence-based tools and projects that are already at hand. • Build an infrastructure at the community level to sustain intervention. • Continue to be a broken record—include community-level practitioners in meetings and forums. • Collaborate with advocacy groups. • Train practitioners to expect to measure outcomes. • Advocate for systems-based change and evaluation. • Create demand. • Request reporting on agency funding practices regarding participatory research/advocate for increase in dollars. • Advocate for incentives regarding practitioner/research collaboration. • Communicate needs to researchers.

Messages to Other Groups

Intermediaries

- Develop funding approaches (e.g., demonstration programs) that explicitly require and reward the implementation of evidence-based practices.
- Commit more research dollars to community-based participatory research.
- Expand funding for capacity-building programs for participating in research and for training on how best to adapt evidence-based interventions from research settings into real-world settings.

Researchers

- Discuss the feasibility, benefits, and importance of research prior to a study's design.
- Communicate clearly to practitioners the benefits of research participation to both practitioners themselves and to the communities they serve.

Researchers' Action Steps

Short-Term	Mid-Term	Long-Term
<ul style="list-style-type: none"> • Contribute editorials/ commentaries to journals and newsletters endorsing and valuing dissemination research. • Give seminars/colloquiums at home institution using common PowerPoint summary of meeting. 	<ul style="list-style-type: none"> • In next grant submittal, include dissemination issues up front in research design. 	<ul style="list-style-type: none"> • Create the demand for changes in: <ul style="list-style-type: none"> -indexing, -study section culture, -dissemination plan and appendix, and -Comprehensive Cancer Centers.
<ul style="list-style-type: none"> • Create linkage with NIH-based community-based participatory research group identifying dissemination as item on agenda. 	<ul style="list-style-type: none"> • Articulate for the field the dissemination pathways for research findings. 	<ul style="list-style-type: none"> • Invest in learning how practitioners diffuse/ disseminate.
	<ul style="list-style-type: none"> • Involve stakeholders upfront in developing research design. 	

Researchers' Messages to Other Groups

Intermediaries

- Create multiple opportunities for training in dissemination research.
- Consider longer study funding periods for intervention research to incorporate time for preliminary dissemination activities.
- Provide new infrastructure support for dissemination research, making it a funding priority and educating NIH study sections to improve review of quality proposals.
- NCI should require that Comprehensive Cancer Centers include the use of evidence-based intervention in their community-based outreach activities.
- Request that the Institute of Medicine prepare a sentinel report on dissemination research in health to facilitate the education process.

Nonfederal Intermediaries' Action Steps

Short-Term	Mid-Term	Long-Term
<ul style="list-style-type: none"> Educate our colleagues about meeting goals 	<ul style="list-style-type: none"> Restructure research focus, reviews, and resources to practitioner/CBO. Partner with public/private payers to tailor evidence to their decisionmaking needs. 	<ul style="list-style-type: none"> Help to form an enduring alliance/center to drive evidence-based cancer control.
<ul style="list-style-type: none"> Identify strategies to realign existing activities (research, practice) in keeping with goals of the meeting. 	<ul style="list-style-type: none"> Build tools and technical assistance to implement evidence-based cancer control. 	
	<ul style="list-style-type: none"> Develop new local partnerships linked to livable communities/employers. 	

Nonfederal Intermediaries' Messages to Other Groups

- Researchers and practitioners should identify best practices or participatory research models.
- Federal intermediaries should set up a clearinghouse of existing dissemination tools.

Federal Intermediaries' Action Steps

Short-Term	Mid-Term	Long-Term
<ul style="list-style-type: none"> Make research dissemination and its application a priority within agencies, e.g., Quality of Cancer Care Committee (QC³). 	<ul style="list-style-type: none"> HHS should promote research and create funding language that includes participatory, return on investment, dissemination research, and other study designs beyond randomized controlled trials. 	<ul style="list-style-type: none"> Develop and expand infrastructures that promote evidence-based findings.
<ul style="list-style-type: none"> Increase knowledge synthesis and link to how-to advice. Increase consumer participation in all aspects of research, dissemination, and implementation. 	<ul style="list-style-type: none"> NIH identify, fund, and provide expertise for the evaluation of experiments and demonstration projects that currently are occurring within HHS. 	<ul style="list-style-type: none"> Encourage agencies with regulatory and administrative authority for the delivery of services to show leadership and use policy and environmental strategies to implement evidence-based cancer control interventions.

Federal Intermediaries' Messages to Other Groups

- Ask practitioners to have their professional societies adopt guidelines that include evidence-based cancer control interventions across the continuum of care.
- Researchers should advocate for institutional support for the dissemination of their research.

Immediate Action Steps

Recognizing the importance of immediate follow-up on the priorities for change identified at the meeting and commitment to act made by the meeting participants, a series of two key short-term actions were identified by all the participant groups. These steps will be a key focus of the 3-month postconference evaluation.

Practitioners

- Locate model programs that demonstrate systematic implementation of evidence-based practice.
- Set as a high priority participation in community-based participatory research.

Researchers

- Begin to communicate through publications and presentations the importance of dissemination research, and develop a common PowerPoint slide set from the meeting that could be used for this purpose.
- Develop links to trans-NIH, HHS, and other government community-based participatory research (CBPR) working groups to explore link between dissemination research and CBPR.

Nonfederal Intermediaries

- Educate colleagues within their own organizations about how best to meet their goals.
- Identify strategies to re-align existing research and practice activities to expand research practice partnerships and dissemination research.

Federal Intermediaries

- Make research dissemination and its application a priority within and across agencies.
- Increase knowledge synthesis efforts and link to specific how-to advice.
- Increase consumer participation in all aspects of research, dissemination, and implementation.

Conference Evaluation Results

An evaluation was conducted to elicit opinions about the preparation for the meeting, the presentations, and the breakout sessions. Open-ended questions asked what steps participants planned to take to move the dissemination and diffusion agenda forward, steps that participants believed NCI should take to support their efforts, and how the meeting could have been improved. Of 150 participants, 64 responded to the evaluation questionnaire. The overwhelming response to the meeting was favorable, and the organizers were praised for

including the mix of critical stakeholders. The range of suggestions and comments received is indicative of the enthusiasm generated by the meeting.

Short-Term Action Steps Participants Plan To Take in the Immediate Future To Move the Dissemination and Diffusion Agenda Forward

Meetings and Seminars

The most frequent response from participants regarding what they planned to do in the short-term to move the dissemination and diffusion agenda forward was to convene meetings or seminars with colleagues and graduate students in various settings (universities, local cancer institute, schools of public health, state health departments, and community participation groups). The meetings will provide avenues for discussing dissemination, the recommendations/outcomes of the meeting, and the issues of research application. Some participants also are considering developing short courses focused on dissemination and diffusion.

Papers

Many participants offered to write editorials or articles on subjects such as:

- Dissemination challenges
- Competing demands of efficacy/effectiveness research and subsequent dissemination
- The translation/dissemination model

In addition, participants recommended communicating with journal editors regarding the importance of including specific information about interventions in journal articles to facilitate dissemination and to encourage journals to be more receptive to dissemination research and activities.

Partnerships

Participants were interested in actively pursuing opportunities for collaboration. They suggested that they would:

- Explore alliances with researchers to develop community-based participatory research initiatives
- Engage new researchers with skills in dissemination and diffusion
- Contact other dissemination/intermediary groups to move agenda forward
- Follow up on meeting contacts with researchers regarding technical assistance in implementing effective practices and collaborative grant opportunities
- Undertake an effort to link researchers, practitioners, intermediaries, and community members to form a seamless transition among intervention development, evaluation, and implementation.

Grants/Funding

Many researchers noted that they planned to submit grant proposals or develop research projects with dissemination components or examine their current research proposals for dissemination issues.

Several intermediaries stated that they would include the requirement that researchers include a dissemination plan in their submitted proposals for an RFA this year. One intermediary intended to emphasize increased and sustained funding for dissemination and implementation as part of the advocacy agenda at the federal level. Another short-term action item relating to funding included intensifying work on coverage issues affecting translation of knowledge into practice.

Action Steps Participants Believe That NCI Should Take To Support Research in Dissemination and Diffusion and Dissemination and Diffusion Research in the Future

The theme most commonly suggested for NCI was to join with other intermediaries and take responsibility for supporting a nationwide permanent, community-based infrastructure for supporting the implementation of research findings.

Increased funding for dissemination components in grants and building dissemination requirements into grant requests encompassed the greatest number of suggestions. Other issues related to training, especially of review groups, and to developing collaborations.

Funding

It was widely suggested that funding support is needed to foster dissemination. For example, NCI should issue RFAs on dissemination research, require research dissemination and diffusion in all applicable RFPs, and allocate resources for this component; ensure that funding is available to focus on dissemination, and not only the research aspects of it; and require and fund the dissemination of effective interventions in existing intervention studies.

NCI should consider increased funding directed to specific groups—including funding for dissemination research for practice networks, grassroots organizations, and community-based projects—and should provide incentives for these groups to disseminate information. NCI also should take leadership responsibility for funding evidence-based interventions with other federal and private agencies.

In addition, NCI should continue and expand the dissemination supplement programs and fund supplements to small practitioner groups to subcontract with universities or consultants to provide data collection and instruction needed by researchers. Funds also are needed to train community-based practitioners for capacity building and learning tools.

Grant Requirements

The most widely expressed action steps relating to grants were for NCI to encourage the inclusion of a dissemination plan on grant applications/proposals and to provide the resources to support their implementation. Conversely, modifying the grant structure to give greater value to dissemination and diffusion research, and ensuring that study review groups will better understand and appreciate this aspect, were mentioned. Specifically, Comprehensive Cancer Centers were suggested as an arena that could build in dissemination core to be funded by NCI.

Some researchers were interested in NCI building in an optional 1-2 years at the end of an intervention trial for a dissemination phase. A separate application after the original intervention trial slows the process and is a disincentive for academicians to continue to the next step. Similarly, as part of intervention trials, NCI should fund longer-term proposals (5-6 years) to allow maintenance and dissemination. Phase 3 trials also should be required to include a plan for their eventual dissemination.

Other grant suggestions included:

- NCI should distinguish between disseminating effective strategies to relevant “consumers” and conducting dissemination research when releasing RFAs, etc.
- NCI should increase funding specifically targeted to promote community-based partnerships and research implementation (not just dissemination)

Training

The most critical and challenging suggestion for NCI was to train/educate NCI/NIH study review sections regarding how to evaluate dissemination research using criteria other than those used for randomized controlled trials. Training and support also should be provided to researchers and practitioners regarding how to disseminate and evaluate their research.

Collaborations

NCI was urged to provide a clear vision and a specific action plan for necessary stakeholder collaboration. Furthermore, NCI should provide more opportunities to develop a broader group of practitioners, researchers, and intermediaries exposed to this dissemination information. For example, involve practitioners and community partners in the research design stage, and promote researcher/practitioner partnerships.

Knowledge Transfer

Although NCI was urged to act on the priority action steps identified by the meeting participants, more specific suggestions for action included:

- Require all grantees to report on lessons learned and implications for practice and to post/share tools for assessment, process evaluation, and outcome evaluation.

- Develop a dissemination think tank and support organization to help researchers in “market research” and to actively develop and implement dissemination plans.
- Develop a network of researchers, practitioners, and intermediaries committed to community-based research.
- Help develop systems for the dissemination of effective ideas, programs, and interventions by acting as a clearinghouse for state-of-the art dissemination methods and best practices, or by promoting online dissemination of knowledge and process assistance by developing a dissemination.gov Web site.
- Finally, one participant noted that NCI should do more than just “more research.” NCI should advocate known and effective cancer control interventions to the practice community. In the research area, there should be an increased focus on the cost-effectiveness of intervention research.

Future Evaluation Activities and Followup

Participants in the Designing for Dissemination meeting agreed that ongoing interaction among researchers, practitioners, and intermediaries is essential to improving the effectiveness of cancer control activities. They also noted that there are few incentives and opportunities to focus on these topics in the course of their daily work lives.

Several groups suggested strategies by which the momentum begun at the meeting could be sustained. Building on the will of conference participants, the following actions are planned:

1. The Center for the Advancement of Health, with support from NCI, will publish a monthly e-newsletter to continue the discussion begun at the meeting. With guidance from an editorial board composed of conference participants, the e-newsletter will:
 - Publish short opinion exchanges by participants.
 - Report on new cancer control funding opportunities at NCI and other public and private agencies.
 - Notify readers of partnership and translation activities they can join.
 - Describe innovative tools and strategies that could be of use to participants.
 - Provide opportunities for leadership in translation activities among readers at the federal and state levels.
2. NCI will again make available dissemination supplements for NCI intervention research grants during 2003. Changes to the program based on the first round of grant applications and awards that are being reviewed include increasing the annual amount of funding and

extending the funding period from 1 to 2 years. NCI also is exploring with other NIH institutes a trans-NIH RFA to fund dissemination and diffusion research grants in a future fiscal year.

3. Meeting organizers are interested in the growth of concern for and commitment to linking research discovery and program delivery. As the meeting was itself an experiment, participants' experiences with incentives, barriers, and opportunities over the coming year will provide valuable insights about how best to attract researchers, practitioners, and other intermediaries to work on research translation and dissemination.

Conference participants will be asked to complete a survey at 3, 6, and 12 months. Results will be shared with participants via the e-newsletter.

As many participants noted, the meeting was just the first step toward building a closer relationship between researchers, practitioners, and intermediaries, with the aim of using evidence-based tools to reduce the burden of cancer. Participants were successful at developing detailed plans of action.

Staff from NCI and the Center for the Advancement of Health join researchers, practitioners, and other intermediaries who contributed to the meeting in their commitment to improved cancer control through the more immediate application of research. It is timely and critical: lives are at stake.

References

- Battista, RN. Innovation and diffusion of health-related technologies. A conceptual framework. *Intl J Technology Assess Health Care*, 1989;5:227-248.
- Bero, LA, Grilli, R, Grimshaw, JM, Harvey, E, Oxman, AD, Thomson, MA. Closing the gap between research and practice: an overview of systematic reviews of interventions to promote the implementation of research findings. *BMJ* 1998;317:465-468.
- Davis, P, Howden-Chapman, P. Translating research findings into health policy. *Soc Sci Med* 1996;43(5):865-872.
- Handley, MR, Stuart, ME, Kirz, HL. An evidence-based approach to evaluating and improving clinical practice: implementing practice guidelines. *HMO Pract* 1994;8(2):75-83.
- Lomas, J. Diffusion, dissemination, and implementation: who should do what? *Ann N Y Acad Sci* 1993;703:226-237.
- Lomas, J. Improving research dissemination and uptake in the health sector: beyond the sound of one hand clapping. Hamilton, Ontario, Canada: Center for Health Economics and Policy Analysis. McMaster University, 1997.
- Orlandi, MA. Health promotion technology transfer: organizational perspectives. *Can J Public Health* 1996;87Suppl 2:S28-33.
- Parcel, GS, Taylor, WC, Brink, SG, Gottlieb, N, Engquist, K, O'Hara, NM, et al. Translating theory into practice: intervention strategies for the diffusion of a health promotion innovation. *Family & Community Health* 1989;12(3):1-13.
- Rogers, EM. Diffusion of innovations. 4th ed. New York: Free Press, 1995.
- Young, WW, Marks, SM, Kohler, SA, Hsu, AY. Dissemination of clinical results. Mastectomy versus lumpectomy and radiation therapy. *Med Care* 1996;34(10):1003-1017.